

## CLAIMS

What is claimed is:

- 1           1.       An apparatus comprising:  
2           a buffer to store at least a default stream coded by a multiple description (MD)  
3 coding and a restart stream coded by a predictive coding, the default and restart streams  
4 corresponding to a media content;  
5           a selector coupled to the buffer to select a transmit frame from the default and  
6 restart streams according to a transmission status, the transmit frame being transmitted  
7 to a receiver; and  
8           an analyzer coupled to the selector to provide the transmission status based on  
9 feedback information provided by the receiver.
  
- 1           2.       The apparatus of claim 1 wherein the transmission status is one of a  
2 normal condition and a restart condition, the restart condition indicating that there is a  
3 frame loss in a description stream of the default stream and that it is time to transmit a  
4 frame from the description stream having the frame loss.
  
- 1           3.       The apparatus of claim 2 wherein the selector selects the transmit frame  
2 from the restart stream when the transmission status is the restart condition.
  
- 1           4.       The apparatus of claim 3 wherein the selector selects the default stream  
2 after the transmit frame is transmitted.
  
- 1           5.       The apparatus of claim 1 wherein the default stream includes a plurality  
2 of description streams that are independently encoded.
  
- 1           6.       The apparatus of claim 1 wherein the analyzer comprises:  
2 a delay tracker to track delay characteristics of a transmission path; and  
3 a probe tracker to keep track of probing packet to be sent over a transmission  
4 path to provide path statistics.
  
- 1           7.       The apparatus of claim 6 further comprising:

2           an input/output (I/O) module coupled to the selector to transmit the default  
3 stream or the restart stream and the probing packets over a transmission path according  
4 to the delay characteristics or the path statistics.

1           8.       An apparatus comprising:  
2           an input/output (I/O) module to receive a stream having a frame from a  
3 transmitter over a transmission path, the frame being selected from one of a default  
4 stream coded by a multiple description (MD) coding and a restart stream coded by a  
5 predictive coding, the default and restart streams corresponding to a media content;  
6           a feedback generator coupled to the receiver to provide feedback information  
7 regarding transmission of the stream to the transmitter; and  
8           a decoder coupled to the receiver to decode the stream.

1           9.       The apparatus of claim 8 wherein the decoder comprises:  
2           an error concealer to conceal error caused by packet loss.

1           10.      The apparatus of claim 8 wherein the I/O module sends an  
2 acknowledgment over the transmission path when the stream is received.

1           11.      A method comprising:  
2           storing at least a default stream coded by a multiple description (MD) coding  
3 and a restart stream coded by a predictive coding in a buffer, the default and restart  
4 streams corresponding to a media content;  
5           selecting a transmit frame from the default and restart streams according to a  
6 transmission status, the transmit frame being transmitted to a receiver; and  
7           providing the transmission status by an analyzer based on feedback information  
8 provided by the receiver.

1           12.      The method of claim 11 wherein the transmission status is one of a  
2 normal condition and a restart condition, the restart condition indicating that there is a  
3 frame loss in a description stream of the default stream and it is time to transmit a  
4 frame from the description stream having the frame loss.

1           13.     The method of claim 12 wherein selecting comprises selecting the  
2     transmit frame from the restart stream when the transmission status is the restart  
3     condition.

1           14.     The method of claim 13 wherein selecting comprises selecting the  
2     default stream after the transmit frame is transmitted.

1           15.     The method of claim 11 wherein the default stream includes a plurality  
2     of description streams that are independently encoded.

1           16.     The method of claim 11 wherein the providing comprises:  
2     tracking delay characteristics of a transmission path; and  
3     keeping track of probing packet to be sent over a transmission path to provide  
4     path statistics.

1           17.     The method of claim 16 further comprising:  
2     transmitting the default stream or the restart stream and the probing packets  
3     over a transmission path according to the delay characteristics or the path statistics.

1           18.     A method comprising:  
2     receiving a stream having a frame from a transmitter over a transmission path,  
3     the frame being selected from one of a default stream coded by a multiple description  
4     (MD) coding and a restart stream coded by a predictive coding, the default and restart  
5     streams corresponding to a media content;  
6     providing feedback information regarding transmission of the stream to the  
7     transmitter; and  
8     decoding the stream.

1           19.     The method of claim 18 wherein the decoding comprises:  
2     concealing error caused by packet loss.

1           20.     The method of claim 18 wherein receiving the stream comprises sending  
2     an acknowledgment over the transmission path when the stream is received.

1           21.     An article of manufacture comprising:

2 a machine-accessible medium including data that, when accessed by a machine,  
3 causes the machine to perform operations comprising:  
4 storing at least a default stream coded by a multiple description (MD) coding  
5 and a restart stream coded by a predictive coding in a buffer, the default and restart  
6 streams corresponding to a media content;  
7 selecting a transmit frame from the default and restart streams according to a  
8 transmission status, the transmit frame being transmitted to a receiver; and  
9 providing the transmission status by an analyzer based on feedback information  
10 provided by the receiver.

1 22. The article of manufacture of claim 21 wherein the transmission status is  
2 one of a normal condition and a restart condition, the restart condition indicating that  
3 there is a frame loss in a description stream of the default stream and that it is time to  
4 transmit a frame from the description stream having the frame loss.

1 23. The article of manufacture of claim 22 wherein the data causing the  
2 machine to perform selecting comprises data that cause the machine to perform  
3 operations comprising selecting the restart stream when the transmission status is the  
4 restart condition.

1 24. The article of manufacture of claim 23 wherein the data causing the  
2 machine to perform selecting comprises data that cause the machine to perform  
3 operations comprising selecting the default stream after the restart stream is  
4 transmitted.

1 25. The article of manufacture of claim 21 wherein the default stream  
2 includes a plurality of description streams that are independently encoded.

1 26. The article of manufacture of claim 21 wherein the data causing the  
2 machine to perform providing the transmission status comprises data that cause the  
3 machine to perform operations comprising:  
4 tracking delay characteristics of a transmission path; and  
5 keeping track of probing packet to be sent over a transmission path to provide  
6 path statistics.

1           27.     The article of manufacture of claim 26 wherein the data causing the  
2 machine to perform providing the transmission status further comprises data that cause  
3 the machine to perform operations comprising:

4           transmitting the default stream or the restart stream and the probing packets  
5 over a transmission path according to the delay characteristics or the path statistics.

1           28.     An article of manufacture comprising:

2           a machine-accessible medium including data that, when accessed by a machine,  
3 causes the machine to perform operations comprising:

4           receiving a stream having a frame from a transmitter over a transmission path,  
5 the frame being selected from one of a default stream coded by a multiple description  
6 (MD) coding and a restart stream coded by a predictive coding, the default and restart  
7 streams corresponding to a media content;

8           providing feedback information regarding transmission of the stream to the  
9 transmitter; and

10          decoding the stream.

1           29.     The article of manufacture of claim 28 wherein the data causing the  
2 machine to perform decoding comprises data that cause the machine to perform  
3 operations comprising:

4           concealing error caused by packet loss.

1           30.     The article of manufacture of claim 28 wherein the data causing the  
2 machine to perform receiving the stream comprises data that cause the machine to  
3 perform operations comprising sending an acknowledgment over the transmission path  
4 when the stream is received.

1           31.     An apparatus comprising:

2           means for storing at least a default stream coded by a multiple description (MD)  
3 coding and a restart stream coded by a predictive coding, the default and restart streams  
4 corresponding to a media content;

5           means for selecting a transmit frame from the default and restart streams  
6 according to a transmission status, the transmit frame being transmitted to a receiver;  
7 and

8 means for providing the transmission status based on feedback information  
9 provided by the receiver.

1 32. The apparatus of claim 31 wherein the transmission status is one of a  
2 normal condition and a restart condition, the restart condition indicating that there is a  
3 frame loss in a description stream of the default stream and that it is time to transmit a  
4 frame from the description stream having the frame loss.

1 33. The apparatus of claim 32 wherein the means for selecting selects the  
2 transmit frame from the restart stream when the transmission status is the restart  
3 condition.

1 34. The apparatus of claim 33 wherein the means for selecting selects the  
2 default stream after the transmit frame is transmitted.

1 35. An apparatus comprising:  
2 means for receiving a stream having a frame from a transmitter over a  
3 transmission path, the frame being selected from one of a default stream coded by a  
4 multiple description (MD) coding and a restart stream coded by a predictive coding, the  
5 default and restart streams corresponding to a media content;  
6 means for providing feedback information regarding transmission of the stream  
7 to the transmitter; and  
8 means for decoding the stream.

1 36. The apparatus of claim 35 wherein the means for decoding comprises:  
2 means for concealing error caused by packet loss.